

BSG Postgraduate Conference Attendance Grant, AGU 2016

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In September 2016 I was awarded £750 by the British Society for Geomorphology to attend the AGU Fall Meeting. I presented a poster at the meeting on “Geomorphometric delineation of floodplains and terraces from slope and channel relief thresholds” in the Earth Surface Processes General Contributions session.

The research I presented outlined a new method for identifying floodplains and fluvial terraces from digital elevation models (DEMs). Identification of flood-prone regions is of increasing societal relevance, as the frequency of flood events is predicted to increase with the rise in global temperatures and varying patterns of precipitation caused by climate change. Traditional methods of identifying flood-prone areas rely on the creation of flood hazard maps, produced through detailed hydraulic modelling studies. These models can be computationally expensive and time-consuming, even in 1-D, requiring a large number of parameters to calibrate them. Furthermore, the location and geometry of fluvial terraces (prior locations of the floodplain) can provide important information about past channel characteristics and sediment dynamics through time. Current methods of identifying fluvial terraces rely on time-consuming field mapping, which is limited to relatively small geographic regions. I presented a new method for identifying these features from topographic data alone based on channel relief and slope thresholds. These thresholds are statistically determined from the DEM, and do not require manual calibration. This method is efficient to run over large spatial scales, and has the potential to be used for a number of different applications.

Presenting this work at the AGU Fall Meeting was invaluable to me, as I received excellent feedback about my research and had many interesting discussions. Following on from this presentation I published this work in *Earth Surface Dynamics*, <https://doi.org/10.5194/esurf-5-369-2017>, as well as including it within my PhD thesis which I completed in July 2017. As well as presenting my own research, I also attended numerous interesting talk and poster sessions throughout the conference which gave me ideas for future research projects and collaborations with others in the field. This was particularly important for the end stages of my PhD as it allowed me to successfully apply for two postdoctoral fellowship schemes: the National Center for Earth-Surface Dynamics (NCED) scheme, which allowed me to spend 3 months working with colleagues at the St. Anthony Falls Laboratory in Minnesota, and the Geo.X fellowship, a 2-year position to combine geoscience with data science at the University of Potsdam, Germany.

I used the £750 awarded to me to cover the cost of my return flight from Edinburgh to San Francisco as well as part of my accommodation for the conference. My registration and subsistence costs were covered by my PhD studentship from the Carnegie Trust for the Universities of Scotland. I wouldn't have been able to attend the conference without the grant from the BSG, for which I am very grateful.